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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/537,238	05/31/2005	Emmanuel Delamarche	CH92000100070US1	8387
32074 7590 06/04/2007 INTERNATIONAL BUSINESS MACHINES CORPORATION DEPT. 18G BLDG. 300-482 2070 ROUTE 52 HOPEWELL JUNCTION, NY 12533			EXAMINER EWALD, MARIA VERONICA	
			ART UNIT 1722	PAPER NUMBER
			MAIL DATE 06/04/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/537,238

Applicant(s)

DELAMARCHE ET AL.

Examiner

Maria Veronica D. Ewald

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 22-32 is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 May 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>5/05&10/06</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Allowable Subject Matter

13. Claims 22 – 32 are allowed. The following is a statement of reasons for the indication of allowable subject matter: Prior art fails to teach or suggest, either alone or in combination, a method for flowing liquid on surface, the method comprising supplying the liquid from a first port of an applicator device to one end of a flow path of the device; applying to the liquid a first port pressure via the first port; receiving the liquid from the other end of the flow path in a second port of the device; applying to the liquid via the second port a second port pressure different to the first port pressure; promoting, via the difference between the first and second port pressures, flow of the liquid from the first port to the second port via the flow path in response to the flow path being located proximal to the surface and the liquid therein contacting the surface; and drawing, via the first and second port pressures, the liquid towards at least the second port in response to withdrawal of the flow path from the surface.

Claim Rejections - 35 USC § 112

14. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claims 1 – 21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. As written, claims(s) 1, 2 and 5 contain process

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limitations, which describe *how the apparatus functions and do not further define the apparatus structurally*. While features of an apparatus may be recited either structurally or functionally, claims directed to >an< apparatus must be distinguished from the prior art in terms of structure rather than function (MPEP 2114). Furthermore, a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987) For example, claim 1 states "...a first port for supplying the liquid to one end of the flow path and for applying a first port pressure for retaining the liquid when the flow path is remote from the surface." Such a limitation is a recitation of intended use and renders the claim indefinite. Appropriate clarification and/or correction of the claims is necessary.

Claim 21 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. As written, claim 21 is describing the first and second port pressures, such that the liquid is drawn towards the first port and the second port in response to withdrawal of the flow path from the surface. Such a limitation describes *how the apparatus functions and does not further define the apparatus structurally* and thus, renders the claim indefinite. Appropriate clarification and/or correction of the claims is necessary.

Claim Rejections - 35 USC § 102

15. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1 – 2 and 4 – 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Lemelson (U.S. 3,526,694). Lemelson teaches a device for flowing liquid on a surface, the device comprising: a flow path (item 34– figure 1); a first port for supplying liquid (item 21 – figure 1); a second port for receiving the liquid from the other end of the flow path (item 25 – figure 1); wherein there is a protrusion extending into the flow path adjacent the first port (see figure 1, top of item 34); wherein there is a peripheral flange (item 33 – figure 1) surrounding the flow path for sealing the flow path to the surface when the device is proximal to the surface; and wherein there is a first opening communicating between the first port and the flow path (item 22 – figure 1); and a second opening communicating between the flow path and the second port (item 25 – opening – figure 1).

Claims 1 and 4 – 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Gruber, et al. (U.S. 6,231,333). Gruber, et al. teach a device for flowing liquid on a surface, the device comprising: a flow path (item 30 – figure 2); a first port for supplying liquid (item 24a – figure 2); and a second port for receiving the liquid from the other end of the flow path (item 22a – figure 2); wherein there is a peripheral flange (item 16b – figure 2) surrounding the flow path for sealing the flow path to the surface when the device is proximal to the surface; and wherein there is a first opening communicating between the first port and the flow path (item 20 – figure 2); and a second opening communicating between the flow path and the second port (item 18 – figure 2).

Claims 1, 5 – 14 and 16 – 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Dubrow, et al. (U.S. 6,488,897). Dubrow, et al. teach a device for flowing liquid on a surface, the device comprising: a flow path (item 114 – figure 1; column 3, lines 30 – 35); a first port for supplying liquid (item 206 – figure 2F; column 9, lines 43 – 45); and a second port for receiving the liquid from the other end of the flow path (column 4, lines 20 – 25); wherein there is a first opening communicating between the first port and the flow path (item 106 – figure 1); and a second opening communicating between the flow path and the second port (column 4, lines 20 – 30).

With respect to claims 6 – 14, Dubrow, et al. further teach that there are sides less wettable by the liquid and sides more wettable by the liquid, wherein the flow path is located on a more wettable side surrounded by less wettable sides (column 7, lines 59 – 67); wherein there is a body housing the first port and the second port and an

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extension protruding from the body to form the flow path, the first and second openings being disposed at opposite ends of the extension (figures 1 and 2F); wherein sides of the extension surrounding the flow path are less wettable to the liquid than the flow path (column 7, lines 60 – 65); wherein the first port comprises a first capillary network (column 9, lines 35 – 50); wherein the first capillary network comprises at least one of a plurality of parallel capillary members (figure 2F); wherein the second port comprises a second capillary network (figure 1); wherein the second capillary network comprises at least one of a plurality of parallel capillary members (figure 1); wherein there is a plurality of first ports each coupled to the flow path (figure 2F; column 9, lines 43 – 47); wherein there is a plurality of second ports each coupled to the flow path (figure 1; column 11, lines 45 – 50).

With respect to claims 16 – 19, the reference also teaches that the flow path has a rectangular cross section (figure 1); wherein the device is formed from a material selected from the group consisting of elastomer, silicon, SU-8, photoresist, thermoplastic, ceramic and metal (column 3, lines 52 – 55, 65 – 68; column 4, lines 1 – 5); wherein the device is of layered construction (column 3, lines 19 – 26); wherein each layer is formed from a material selected from the group consisting of elastomer, silicon, SU-8, photoresist, thermoplastic, ceramic and metal (column 3, lines 40 – 55).

Claims 1, 5, 9, 11, 13 – 14, 16 and 18 are rejected under 35 U.S.C. 102(e) as being anticipated by Freudenthal, et al. (U.S. 6,942,836). Freudenthal, et al. teach a flow path (item 12 – figure 1B); a first port for supplying liquid to one end of the flow path

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(item 70 – figure 9; column 6, lines 53 – 57); a second port for receiving the liquid from the other end of the flow path (item 14 – figure 1B); wherein there is a first opening communicating between the first port and the flow path (item 22 – figure 1B; column 6, lines 53 – 57); and a second opening communicating between the flow path and the second port (figure 1B).

With respect to claims 9, 11 and 13 – 14, the reference further teaches that the first port comprises a first capillary network (figures 1A and 6); wherein the second port comprises a second capillary network (figure 1A); wherein there is a plurality of first ports each coupled to the flow path (figure 6); wherein there is a plurality of second ports each coupled to the flow path (figure 1A).

With respect to claims 16 and 18, the reference also teaches that the flow path has a rectangular cross-section (figure 1A; column 4, lines 5 – 10); wherein the device is of layered construction (figure 1B; column 4, lines 1 – 10, 40 – 50).

Claims 1 – 3, 5, 9 – 12, 16 – 20 are rejected under 35 U.S.C. 102(e) as being anticipated by Unger, et al. (U.S. 6,951,632). Unger, et al. teach a flow path (item 108 – figure 3D); a first port for supplying liquid to one end of the flow path (item 116a – figure 3D); a second port for receiving the liquid from the other end of the flow path (item 116b – figure 3D); wherein there is a protrusion extending into the flow path adjacent the first port (item 132a – figure 3D; column 11, lines 65 – 68; column 12, lines 1 – 5); wherein the protrusion is resilient (figure 3D; column 11, lines 65 – 66); wherein the device has a first opening communicating between the first port and the flow path (figure 3D; tip of

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channel 116a); and a second opening communicating between the flow path and the second port (figure 3D; tip of channel 116b).

With respect to claims 9 – 12, Unger, et al. further teach that the first port comprises a first capillary network (column 11, lines 25 – 30; column 26, lines 50 – 65); wherein the first capillary network comprises at least one of a plurality of parallel capillary members, a mesh, a porous material and a fibrous material (figure 8B); wherein the second port comprises a second capillary network (figure 8B); wherein the second capillary network comprises at least one of a plurality of parallel capillary members, a mesh, a porous material and a fibrous material (figure 8B).

With respect to claims 16 – 20, the reference also teaches that the flow path has a rectangular cross section (figure 3D); wherein the device is formed from a material selected from the group consisting of elastomer, silicon, SU-8, photoresist, thermoplastic, ceramic and metal (column 12, lines 15 – 45; column 14, lines 1 – 15); wherein the device is of layered construction (column 11, lines 35 – 45; column 15, lines 15 – 50); wherein each layer is formed from a material selected from the group consisting of elastomer, silicon, SU-8, photoresist, thermoplastic, ceramic and metal (column 12, lines 15 – 45; column 14, lines 1 – 15; column 15, lines 60 – 68); wherein the flow path is approximately 100 μm in length and approximately 100 μm in width, the volumes of the first and second ports are 500 nanoliters each and in use, the protrusion defines a spacing between the device and the surface in the region of between 1 and 10 μm (column 17, lines 1 – 30 and 51 – 68).

Claim Rejections - 35 USC § 103

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dubrow, et al. Dubrow, et al. teach the characteristics previously described but do not teach that the flow path has a curved cross section; however, Dubrow, et al. do teach that flow path or passageway can be fabricated in varying cross sections, depending on the user's needs. Furthermore, the reference teaches that the body structure can be fabricated, such that non-uniform shapes are produced, depending on the application of the device (column 3, lines 10 – 15).

Thus, it would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to configure the flow path of Dubrow, et al. such that it is curved for the purpose of fabricating a microfluidic device for a specific type of application.

Conclusion

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Maria Veronica D. Ewald whose telephone number is 571-272-8519. The examiner can normally be reached on M-F, 8 - 4:30.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Yogendra Gupta can be reached on 571-272-1316. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MVE


ROBERT DAVIS
PRIMARY EXAMINER
GROUP 1300, 1700

5/29/07